

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Prajakta S. Joshi
Application No. : 10/674,627
Filed : September 29, 2003
For : GLOBAL SERVER LOAD BALANCING SUPPORT FOR
PRIVATE VIP ADDRESSES

Examiner : Ted T. Vo
Art Unit : 2191
Docket No. : 350078.409
Date : September 30, 2008

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AFFIDAVIT OF PRAJAKTA S. JOSHI

Commissioner for Patents:

1. My name is Prajakta S. Joshi, and I have the mailing address indicated below:

Prajakta S. Joshi
Foundry Networks, Inc.
4980 Great America Parkway
Santa Clara, California 95054
United States

2. I am an original, first, and sole inventor of the subject matter that is claimed in and for which a patent is sought by U.S. Patent Application Serial No. 10/674,627 identified above (the "present application").

3. I am currently employed as a software engineer at Foundry Networks, Inc. (the assignee of the present application), and have been employed at Foundry Networks, Inc. since approximately April 2002.

4. My employment duties include the design, testing, and implementation of products and features for Foundry Networks, Inc.'s Global Server Load Balancing (GSLB) technology, to which the subject matter of the present application is directed.

5. My educational background includes a Bachelor's of Engineering from University of Pune in India in 1998 and a Masters of Computer Science from the University of Southern California in 1999.

6. Based on my educational and industry experience described above, I am knowledgeable of the subject matter described in Foundry Networks, Inc.'s white paper entitled "Server Load Balancing in Today's Web-Enabled Enterprise" (hereinafter "the White Paper"), the Alteon WebSystems, Inc. document entitled "Enhancing Web User Experience with Global Server Load Balancing (hereinafter "the Alteon document"), and the Cisco Systems Inc. document entitled "Configuring the CSS Domain Name Service (hereinafter "the Cisco document"), which have been cited by the U.S. Patent Office against the claims in the present application.

7. I have read and understand the subject matter described in the White Paper, the Alteon document, and the Cisco document.

8. Page 6 *et seq.* of the White Paper describes operation of Foundry Networks, Inc.'s GSLB technology that existed before my invention as presently claimed in the present application. The present claims distinguish over this GSLB technology. Specifically, with the GSLB technology that existed at the time of the White Paper, for an implementation where a private virtual IP address is configured at a site switch (such as at the site switch in San

Francisco shown in the figure on page 6 of the White Paper) and where such private virtual IP address was mapped to a public virtual IP address, this site switch would not be aware of this mapping and would communicate the private virtual IP address configured thereon to the load balance switch (shown as the controller GSLB switch or “CGS” in the figure in page 6 of the White Paper). What I am claiming in the present application is different, as described later below.

9. Figure A below further illustrates by way of example the GSLB technology of the White Paper, for an implementation where a VIP’s private IP address (“private VIP address”) is configured at a site switch. The real IP addresses of Host Server 1 and Host Server 2 (e.g., real IP addresses 10.10.10.1 and 10.10.10.2 respectively) are associated with a private VIP address (e.g., private VIP address 10.10.10.3) that is configured at Site Switch 1. Site Switch 1 provides/reports this private VIP address 10.10.10.3 configured thereon to the CGS. The CGS (GSLB switch controller) provides GSLB for a domain *www.foo.com* (for example). The domain *www.foo.com* is serviced by the VIP’s public IP address (“public VIP address”), such as a public VIP address 192.168.10.1. An authoritative DNS server for the domain *www.foo.com* provides/reports the public VIP address (e.g., the public VIP address 192.168.10.1 that maps/translates to the private VIP address 10.10.10.3) to the CGS. Site Switch 1 (and the other site switches in the figure in page 6 of the White Paper) was not aware of the translation/mapping of the private VIP address 10.10.10.3 configured thereon to the public VIP address 192.168.10.1.

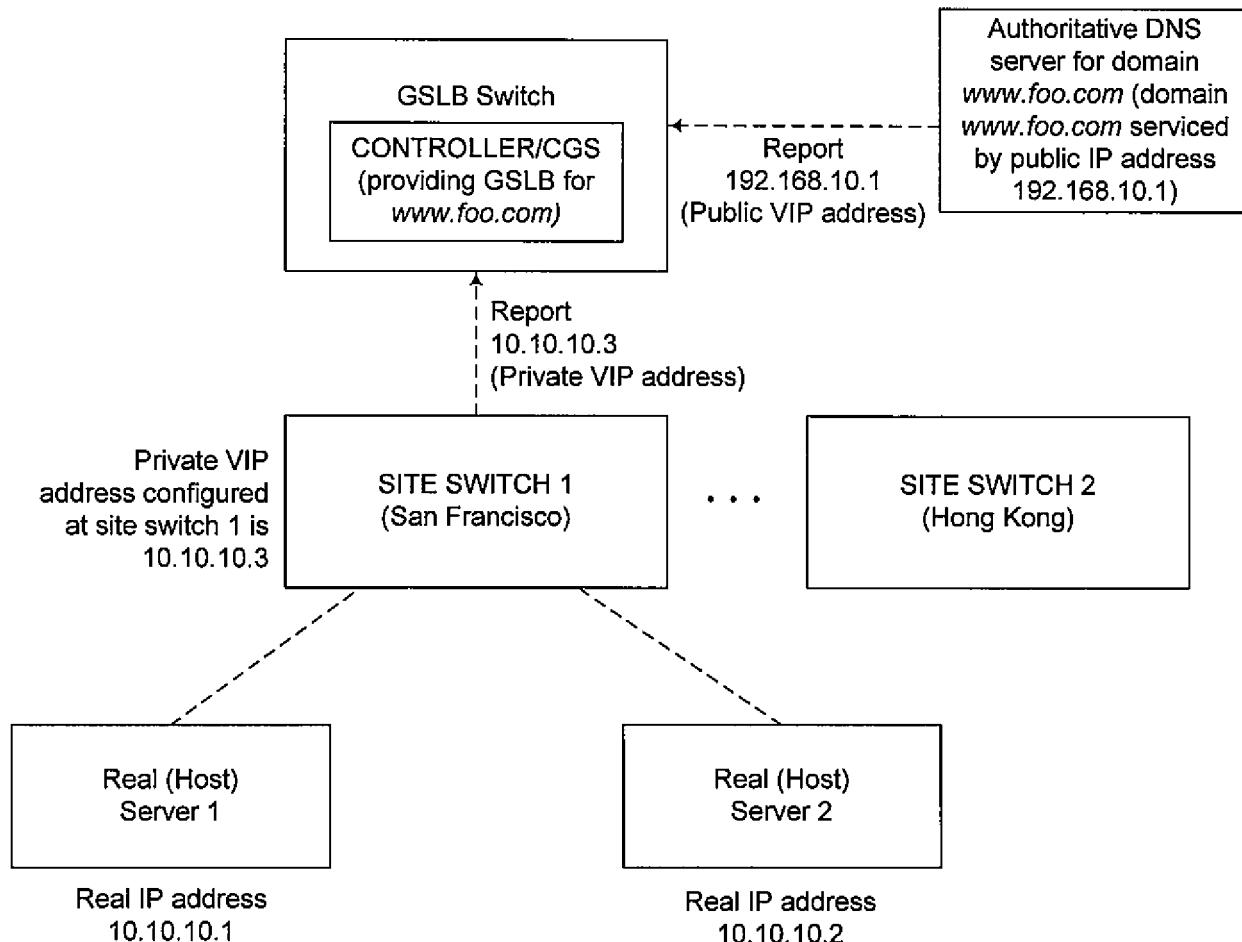


Figure A

10. Communication by the site switch of the private virtual IP address (e.g., 10.10.10.3) configured thereon to the load balance switch (CGS) caused certain problems in the use of a load balancing algorithm by the load balance switch of the White Paper. For example, the load balance switch would not be able to match the private VIP address (e.g., 10.10.10.3) received from the site switch with the public VIP address (e.g., 192.168.10.1) received from the DNS server. These problems are further explained on pages 2-4 of the present application.

11. To address such problems, the embodiments described in the present application provided the following example features: (a) obtaining, by the site switch, mapping information that provided a translation between a private virtual IP address configured at that site

switch and a public virtual IP address, and (b) providing, by the site switch, the public virtual IP address to a load balancing controller. Figure B below illustrates by way of example the operation of my embodiment(s) disclosed in the present application.

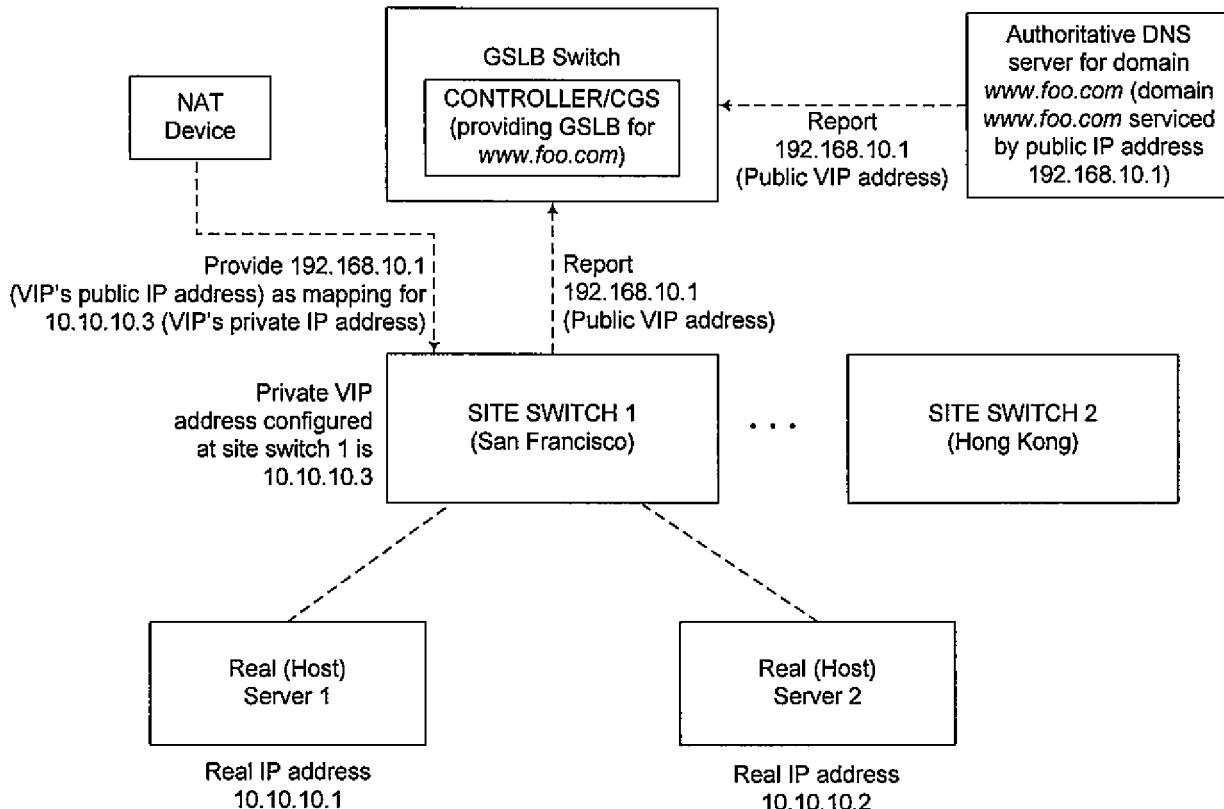


Figure B

12. As can be seen in Figure B above, Site Switch 1 has a private VIP address (e.g., the private VIP address 10.10.10.3) configured thereon, and obtains from a mapping device, such as a network address translation (NAT) device, the public VIP address (e.g., the public VIP address 192.168.10.1) that maps/translates to the private VIP address 10.10.10.3—the NAT device provides 192.168.10.1 (the VIP's public IP address) as mapping for 10.10.10.3 (the VIP's private IP address). As such, Site Switch 1 is able to provide the public VIP address 192.168.10.1 to the CGS. The CGS in turn is able to successfully match the public VIP address 192.168.10.1 provided by Site Switch 1 with the public VIP address 192.168.10.1 provided by the DNS server. Accordingly, the claims of the present application distinguish over the GSLB

technology described in the White Paper, by including the following claim terms (in claim 1 for example) that are not shown or described by the GSLB technology in the White Paper: “obtaining at one of said site switches mapping information that provides a translation between a private virtual IP address, configured at said site switch and associated with said at least one host server corresponding to said site switch, and a public virtual IP address” and “providing, by said site switch, said public virtual IP address to at least one load balancing controller.”

13. The U.S. Patent Office has also cited the Alteon document against the claims in the present application. Figure One and the accompanying description on page 2 of the Alteon document describe site switch A that “returns site B’s virtual IP address (VIP) address [172.176.110.20] to the client’s local DNS.” The local DNS server then “responds to client with site B’s VIP” and the client “opens application session to IP 172.176.110.20.” Since the VIP address 172.176.110.20 is returned to the client and the client is able to open a session to this VIP address, this means that the VIP address 172.176.110.20 is a public VIP address configured at site B (described in the Alteon document as “site B’s virtual IP address”). Thus, the Alteon document does not describe an implementation involving private VIP address configured at the site switch, and therefore the Alteon document in my view does not provide the claimed features (such as in claim 1) of (a) “obtaining at one of said site switches mapping information that provides a translation between a private virtual IP address, configured at said site switch and associated with said at least one host server corresponding to said site switch, and a public virtual IP address,” and (b) “providing, by said site switch, said public virtual IP address to at least one load balancing controller.”

14. The U.S. Patent Office has also cited the Cisco document against the claims in the present application. Pages 12-13 of the Cisco document describe the configuration to use a content services switch (CSS) to perform network address translation (NAT) to translate a private IP address of a server (e.g., the private IP address 10.0.3.251) to a public VIP address (e.g., the public VIP address 192.200.200.200) and vice versa. According to my reading of the Cisco document, the private IP address 10.0.3.251 of the server described in the Cisco document

Application No. 10/674,627
Affidavit of Prajakta S. Joshi

is a private real IP address of the server, rather than a private virtual IP address that is configured at a site switch. Evidence that the private IP address 10.0.3.251 is a real IP address of a server, rather than a private VIP address configured at a site switch, is provided on page 12 of the Cisco document, which states that "The source group enables the CSS to perform Network Address Translation to translate outbound traffic source IP addresses from the server's private IP address (10.0.3.251) to the public VIP address (192.200.200.200). To prevent server source port collisions, the CSS performs Network Address Translation on the server's source IP address and port by translating the: Source IP address to the IP address defined in the source group" (emphasis added). Accordingly, the Cisco document also does not provide the claimed features (such as in claim 1) of (a) "obtaining at one of said site switches mapping information that provides a translation between a private virtual IP address, configured at said site switch and associated with said at least one host server corresponding to said site switch, and a public virtual IP address," and (b) "providing, by said site switch, said public virtual IP address to at least one load balancing controller."

15. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I make these statements with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the present application or any patent issuing thereon.

10/02/2008

Date

Prajakta S. Joshi
Prajakta S. Joshi
Foundry Networks, Inc.
4980 Great America Parkway
Santa Clara, CA 95054

701 Fifth Avenue, Suite 5400
Seattle, Washington 98104-7092
Phone: (206) 622-4900
Fax: (206) 682-6031

1213387_1.DOC